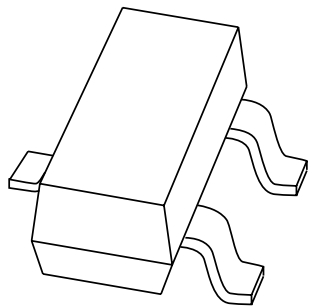


DATA SHEET



BRY61 Programmable unijunction transistor

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 Jul 21

Programmable unijunction transistor

BRY61

DESCRIPTION

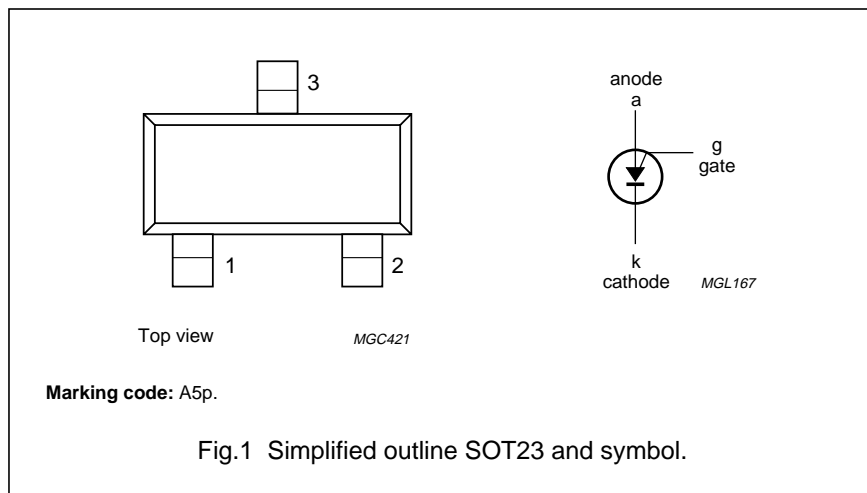
Planar PNP trigger device in a SOT23 plastic package.

APPLICATIONS

- Switching applications such as:
 - Motor control
 - Oscillators
 - Relay replacement
 - Timers
 - Pulse shapers, etc.

PINNING

PIN	DESCRIPTION
1	anode
2	cathode
3	gate



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{GA}	gate-anode voltage		–	70	V
$I_{A(AV)}$	average anode current		–	175	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	–	250	mW
T_j	operating junction temperature		–	150	$^\circ\text{C}$
I_P	peak point current	$V_S = 10\text{ V}; R_G = 10\text{ k}\Omega$	–	0.2	μA
I_V	valley point current	$V_S = 10\text{ V}; R_G = 10\text{ k}\Omega$	2	–	μA

Programmable unijunction transistor

BRY61

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{GA}	gate-anode voltage		–	70	V
$I_{A(AV)}$	average anode current		–	175	mA
I_{ARM}	repetitive peak anode current	$t_p = 10 \mu s$; $\delta = 0.01$	–	2.5	A
I_{ASM}	non-repetitive peak anode current	$t_p = 10 \mu s$	–	3	A
di_A/dt	rate of rise of anode current	$I_A \leq 2.5 A$	–	20	A/ μs
P_{tot}	total power dissipation	$T_{amb} \leq 25 \text{ }^\circ C$	–	250	mW
T_{stg}	storage temperature		–65	+150	$^\circ C$
T_j	junction temperature		–	150	$^\circ C$
T_{amb}	operating ambient temperature		–65	+150	$^\circ C$

THERMAL CHARACTERISTICS

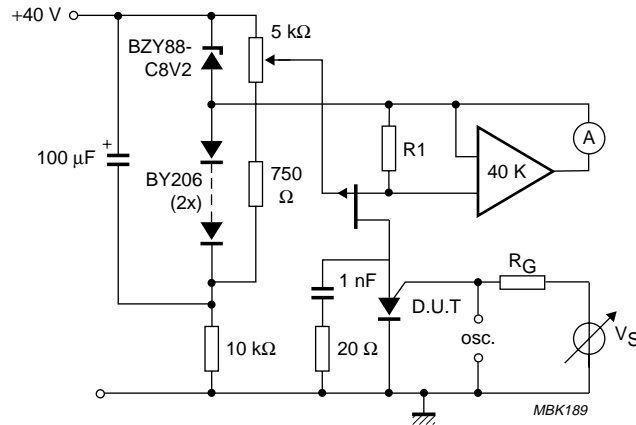
SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th j-a}$	thermal resistance from junction to ambient	in free air	500	K/W

CHARACTERISTICS $T_{amb} = 25 \text{ }^\circ C$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_P	peak point current	$V_S = 10 V$; $R_G = 10 k\Omega$; see Fig.7	–	–	0.2	μA
		$V_S = 10 V$; $R_G = 100 k\Omega$; see Fig.7	–	–	0.06	μA
I_V	valley point current	$V_S = 10 V$; $R_G = 10 k\Omega$; see Fig.7	2	–	–	μA
		$V_S = 10 V$; $R_G = 100 k\Omega$; see Fig.7	1	–	–	μA
V_{offset}	offset voltage	typical curve; $I_A = 0$; see Fig.7	–	$V_P - V_S$	–	V
I_{GAO}	gate-anode leakage current	$I_K = 0$; $V_{GA} = 70 V$; see Fig.5	–	–	10	nA
I_{GKS}	gate-cathode leakage current	$V_{AK} = 0$; $V_{KG} = 70 V$; see Fig.6	–	–	100	nA
V_{AK}	anode-cathode voltage	$I_A = 100 mA$	–	–	1.4	V
V_{OM}	peak output voltage	$V_{AA} = 20 V$; $C = 10 nF$; see Figs 8 and 9	6	–	–	V
t_r	rise time	$V_{AA} = 20 V$; $C = 10 nF$; see Fig.9	–	–	80	ns

Programmable unijunction transistor

BRY61



I_P and I_V determined by value of R_1 .
 $R_1 = \frac{1}{I_A}$; i.e. maximum voltage drop over $R_1 = 1\text{ V}$.
 Internal resistance of oscilloscope = $10\text{ M}\Omega$.

Fig.2 Measuring circuit for peak and valley point currents.

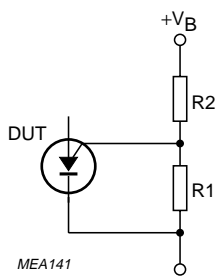


Fig.3 BRY61 with 'program' resistors R_1 and R_2 .

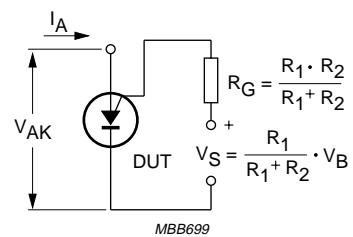


Fig.4 Equivalent test circuit for characteristics testing.

Programmable unijunction transistor

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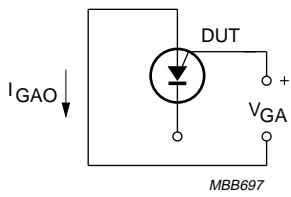


Fig.5 Equivalent test circuit for gate-anode leakage current.

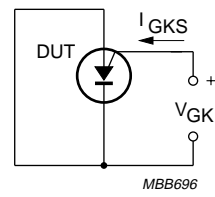


Fig.6 Equivalent test circuit for gate-cathode leakage current.

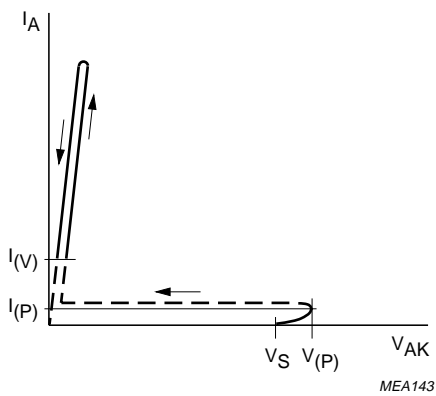


Fig.7 Offset voltage.

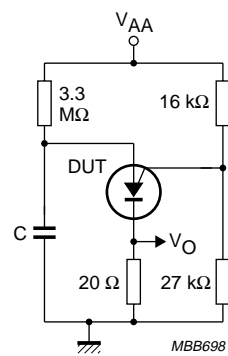
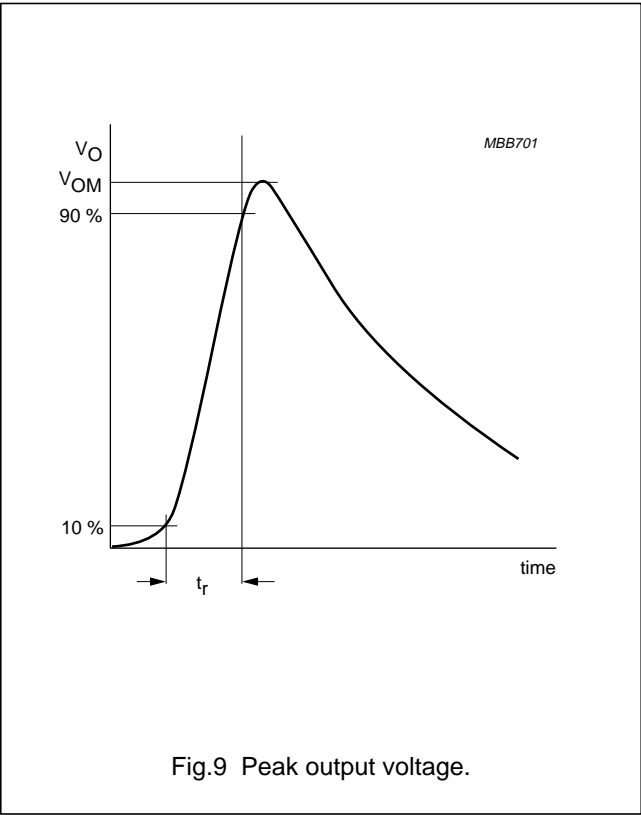


Fig.8 Test circuit for peak output voltage.

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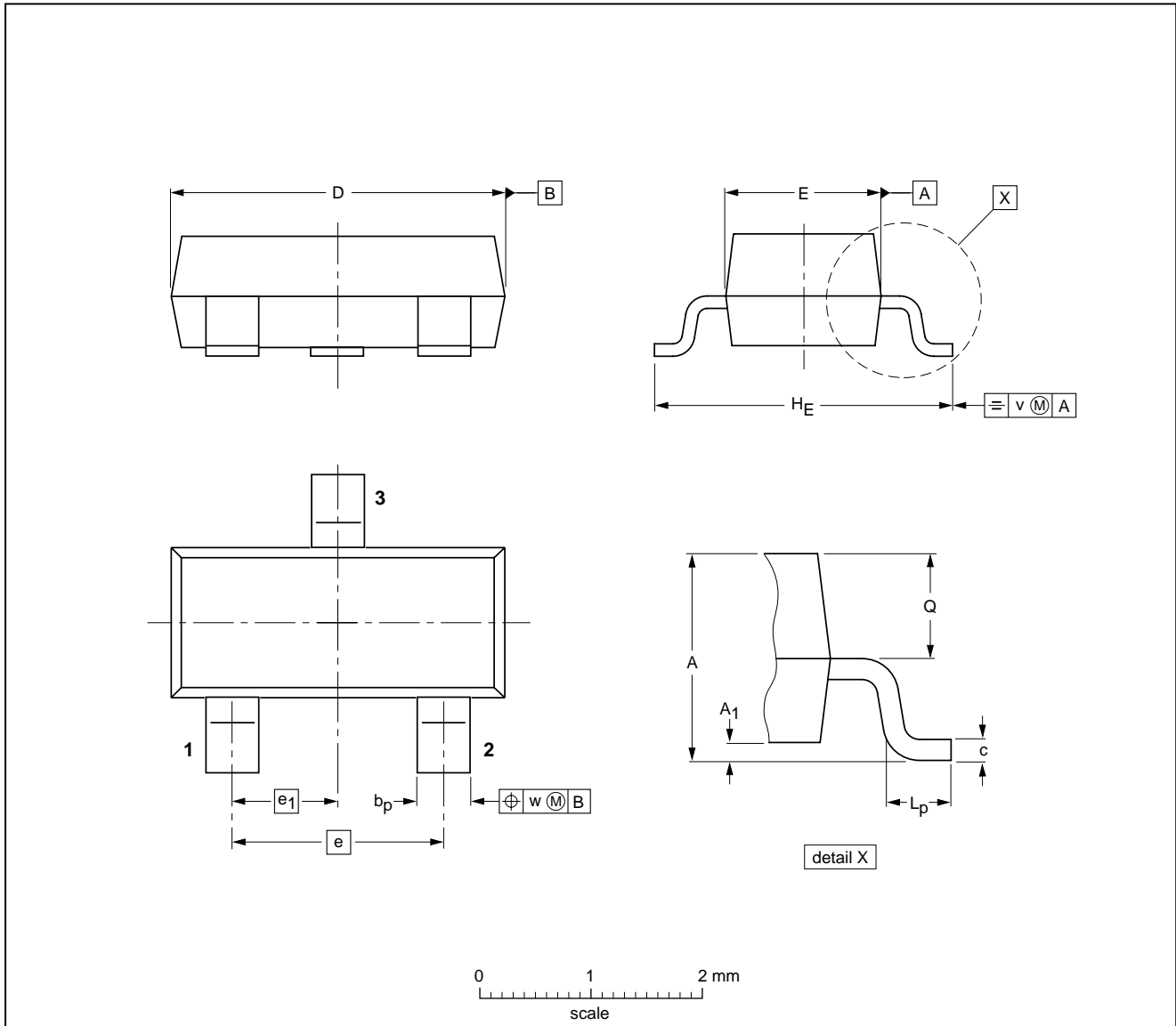
Programmable unijunction transistor

BRY61

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

Programmable unijunction transistor**BRY61**

DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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NOTES

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